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REMARKS

In this Response, claims 1, 21, 28, 35 and 37 have been amended, and claims 6, 7 and 41 have been canceled. Claims 1-5, 8-40 and 42-47 are currently pending, of which claims 1, 21, 28 and 37 are independent. No new matter has been added.

Independent claims 1, 21, 28 and 37 have been amended to incorporate the subject matter of dependent claims 6 and 7. No new matter has been added and no new issues are raised by way of this amendment. As such, Applicants respectfully request the Examiner to enter the amended claims.

I.   Summary of Rejections

Claim 35 stands rejected under 35 U.S.C. §112, first paragraph.

Claims 1-3, 5-7, 21-23, 26-33, 36-41 and 44-47 stand rejected under 35 U.S.C. §102(b) as being anticipated by US Patent Publication Number 2001/0025292 to Denk et al (hereafter "Denk").

Claims 4, 24, 25, 34, 42 and 43 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Denk in view of US Patent Number 5,677,951 to Gay (hereafter "Gay").

Claims 8, 19 and 20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Denk in view of AutoCode Solutions (hereafter "AutoCode").

Claims 9-18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Denk in view of AutoCode and further in view of Digital Filter Solution (hereafter "DFS").

These rejections will be discussed separately below.

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II. Rejection of Claim 35 under 35 U.S.C. §112

The Examiner rejected claim 35 under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. More particularly, the Examiner alleges at pages 2-3 of the Office Action:

> "Claim 35 recites the limitation of inheriting the state of the object from an abstract class. On page 11, 3rd paragraph, for example, "... The parent class is not suitable for instantiation and used to abstract out incomplete set of features...." In essence, an abstract cannot be used for instantiation, so it is impossible to have an object from an abstract class."

In the claim amendments, Applicants amend claim 35 to recite "the step of inheriting a state property corresponding to the state of the object from an abstract class." Applicants believe that the Specification at pages 11-12 provides sufficient enablement for the claim as amended. As such, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 35.

III. Rejection of Claims under 35 U.S.C. §102(b)

The Examiner rejected claims 1-3, 5-7, 21-23, 26-33, 36-41 and 44-47 under 35 U.S.C. §102(b) as being anticipated by Denk. Applicants respectfully traverse the 35 U.S.C. §102(b) rejections of claims 1-3, 5-7, 21-23, 26-33, 36-41 and 44-47 as set forth below.

A. Claim 1

Amended independent claim 1 recites:

> "In a computer system, a method for implementing and using a filter object which generates an output in response to an input of the filter object, wherein the output of the filter object depends on the input and a state of the filter object, wherein the state of the filter object includes a minimum amount of information necessary to determine the output of the filter object, the method comprising:
>   providing the filter object, the filter object being represented by equations performed to generate the output in response to the input of the filter object, the equations including the state of the filter object; and

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      retaining the state of the filter object;
      wherein the filter object is implemented and used in a first dynamically typed text-based programming environment, wherein *the output of the filter object is determined based on a present input of the filter object and a previous input of the filter object, and wherein the state of the filter object contains information about the previous input of the filter object.*" [emphasis added]

Denk pertains to rounding techniques (Denk, paragraph [0029]). More specifically, Denk discusses methods and apparatus that reduce the precision of an input signal value having a first precision to an output signal value having a second, lesser precision in a manner that greatly reduces, or substantially cancels, a precision reduction error signal (Denk, paragraph [0029]). By combining the input signal with a selectable bias, responsive to a pre-selected threshold rounding state, the rounding methods and apparatus provide an output signal that is substantially free of precision reduction error bias (Denk, paragraph [0029]). In addition, where it is desired to produce a pre-selected signal offset, values for the selectable bias can be assigned to generate the offset (Denk, paragraph [0029]).

Applicants respectfully submit that Denk fails to disclose every feature of amended independent claim 1. Therefore, Denk does not support a valid 35 U.S.C. §102(b) rejection of claim 1. For example Denk does not disclose at least the following feature of claim 1: "the output of the filter object is determined based on a present input of the filter object and a previous input of the filter object, and wherein the state of the filter object contains information about the previous input of the filter object."

Denk discusses combining a current selectable bias value α with a current input signal Y 200 to produce a current reduced precision output signal 220 (Denk, paragraph [0043]). As illustrated in Figure 3 of Denk, the current selectable bias value α is determined by the current input X and the current error signal e. Denk does not disclose using a previous input to determine the reduced precision output signal or even to determine the selectable bias value. Even if Denk did disclose using a previous input to determine the reduced precision output signal, Denk still would not disclose "the output of the filter object is determined based on a present input of the filter object and a previous input of the filter object, and wherein the state of the filter object contains information about the previous input of the filter object," as recited in

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claim 1. Moreover, Denk does not disclose that the reduced precision output signal or the selectable bias value includes information on a previous input. Figure 3 of Denk shows the determination of a data output for a single data input, and does not address how a previous data input may be used to determine the current data output or the state. Denk does not disclose that the output of the filter object is determined based on a present input of the filter object and a previous input of the filter object, and wherein the state of the filter object contains information about the previous input of the filter object, as required by claim 1.

For at least the reasons presented above, Applicants respectfully request reconsideration and allowance of claim 1.

B. Claims 2-3 and 5-7

Claims 2-3 and 5 depend from independent claim 1 and, as such, incorporate all of the features of claim 1. Accordingly, claims 2-3 and 5 are allowable for at least the reasons set forth above with respect to claim 1. Applicants respectfully request reconsideration and allowance of claims 2-3 and 5.

In the claim amendments, claims 6 and 7 have been canceled. As such the 35 U.S.C. §102(b) rejection of claims 6 and 7 is rendered moot.

C. Claim 21

Amended independent claim 21 recites:

> "In a computer-implemented system, a method for generating an output of the system in response to an input of the system, the method comprising the steps of:
> specifying a state of the system that includes a minimum amount of information that is necessary to determine the output of the system;
> retaining the state of the system in a memory;
> providing to the system the state of the system retained in the memory; and
> determining the output of the system depending on the input and a state of the system;
> wherein the method is implemented in a dynamically typed text-based programming environment, wherein *the output of the system is determined based on a present input of the system and a previous input of the system, and wherein*

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the state of the system contains information about the previous input of the system." [emphasis added]

Applicants respectfully submit that Denk fails to disclose at least the following features of claim 21: "the output of the system is determined based on a present input of the system and a previous input of the system, and wherein the state of the system contains information about the previous input of the system." As discussed above in connection with claim 1, Denk fails to disclose "the output of the filter object is determined based on a present input of the filter object and a previous input of the filter object, and wherein the state of the filter object contains information about the previous input of the filter object," and therefore Denk does not support a valid 35 U.S.C. §102(b) rejection of claim 21. Applicants respectfully request reconsideration and allowance of claim 21.

D.   Claims 22-23 and 26-27

Claims 22-23 and 26-27 depend from independent claim 21 and, as such, incorporate all of the features of claim 21. Accordingly, claims 22-23 and 26-27 are allowable for at least the reasons set forth above with respect to claim 21. Applicants respectfully request reconsideration and allowance of claims 22-23 and 26-27.

E.   Claim 28

Amended independent claim 28 recites:

"A computer readable medium holding instructions executable in a computer that provides a dynamically typed text-based programming environment, wherein the computer generates an output of an object in response to an input of the object, comprising:
    providing a class, the object being an instance of the class;
    specifying a state of the object that includes a minimum amount of information that is necessary to determine the output of the system, the state being a property of the object; and
    determining the output of the object depending on the input and the state of the system;

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> wherein *the output of the object is determined based on a present input of the object and a previous input of the object, and wherein the state of the object contains information about the previous input of the object.*" [emphasis added]

Applicants respectfully submit that Denk fails to disclose at least the following feature of claim 28: "the output of the object is determined based on a present input of the object and a previous input of the object, and wherein the state of the object contains information about the previous input of the object." As discussed above in connection with claim 1, Denk fails to disclose "the output of the filter object is determined based on a present input of the filter object and a previous input of the filter object, and wherein the state of the filter object contains information about the previous input of the filter object," and therefore Denk does not support a valid 35 U.S.C. §102(b) rejection of claim 28. Applicants respectfully request reconsideration and allowance of claim 28.

F.   Claims 29-33 and 36

Claims 29-33 and 36 depend from independent claim 28 and, as such, incorporate all of the features of claim 28. Accordingly, claims 29-33 and 36 are allowable for at least the reasons set forth above with respect to claim 28. Applicants respectfully request reconsideration and allowance of claims 29-33 and 36.

G.   Claim 37

Amended independent claim 37 recites:

> "A system for implementing a filter object which generates an output in response to an input of the filter object, wherein the output of the filter object depends on the input and a state of the filter object, wherein the state of the filter object includes a minimum amount of information necessary to determine the output of the filter object, the method comprising:
> a memory for retaining the state of the filter object; and
> a state equation processing unit for generating a new state of the filter object based on the state of the filter object retained in the memory and the input of the filter object;
> wherein the filter object is implemented and used in a first dynamically typed text-based programming environment, wherein *the output of the filter*

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object is determined based on a present input of the filter object and a previous input of the filter object, and wherein the state of the filter object contains information about the previous input of the filter object." [emphasis added]

Applicants respectfully submit that Denk fails to disclose at least the following feature of claim 37: "the output of the filter object is determined based on a present input of the filter object and a previous input of the filter object, and wherein the state of the filter object contains information about the previous input of the filter object." As discussed above in connection with claim 1, Denk fails to disclose "the output of the filter object is determined based on a present input of the filter object and a previous input of the filter object, and wherein the state of the filter object contains information about the previous input of the filter object," and therefore Denk does not support a valid 35 U.S.C. §102(b) rejection of claim 37. Applicants respectfully request reconsideration and allowance of claim 37.

H.   Claims 38-41 and 44-47

Claims 38-40 and 44-47 depend from independent claim 37 and, as such, incorporate all of the features of claim 37. Accordingly, claims 38-40 and 44-47 are allowable for at least the reasons set forth above with respect to claim 37. Applicants respectfully request reconsideration and allowance of claims 38-40 and 44-47.

In the claim amendments, claim 41 has been canceled. As such the 35 U.S.C. §102(b) rejection of claim 41 is rendered moot.

IV.   Claim Rejections under 35 U.S.C. §103

A.   Claims 4, 24, 25, 34, 42 and 43

The Examiner rejected claims 4, 24, 25, 34, 42 and 43 under 35 U.S.C. §103(a) as being unpatentable over Denk in view of Gay. Applicants respectfully traverse the 35 U.S.C. §103(a) rejections of claims 4, 24, 25, 34, 42 and 43 as set forth below.

Denk has been summarized above.

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Gay discusses a dynamically regularized fast recursive least squares (FRLS) adaptive filter and method which provide O(N) computational complexity and which have dynamically adjusted regularization in real-time without requiring restarting the adaptive filtering (Gay, abstract). The adaptive filter includes a memory for storing at least one program, including a dynamically regularized fast recursive least squares (DR-FRLS) program; and a processor which responds to the DR-FRLS program for adaptively filtering an input signal and for generating an output signal associated with the input signal (Gay, abstract).

A combination of Denk and Gay does not disclose or suggest the features of claims 4, 24, 25, 34, 42 and 43. As discussed previously in connection with claim 1, Denk fails to disclose or suggest the features of claims 1, 21, 28, and 37 from which claims 4, 24, 25, 34, 42 and 43 depend. The teachings of Gay do not supplement Denk in such a way as to cure the shortcomings of Denk with respect to the features of independent claims 1, 21, 28, and 37.

Gay fails to disclose or suggest "the output of the filter object is determined based on a present input of the filter object and a previous input of the filter object, and wherein the state of the filter object contains information about the previous input of the filter object," as recited in amended independent claim 1. As such, a combination of Denk and Gay fails to disclose or suggest the features of claim 4 which depends on claim 1.

Gay fails to disclose or suggest "the output of the system is determined based on a present input of the system and a previous input of the system, and wherein the state of the system contains information about the previous input of the system," as recited in amended independent claim 21. As such, a combination of Denk and Gay fails to disclose or suggest the features of claims 24 and 25 which depend on claim 21.

Gay fails to disclose or suggest "the output of the object is determined based on a present input of the object and a previous input of the object, and wherein the state of the object contains information about the previous input of the object," as recited in amended independent claim 28. As such, a combination of Denk and Gay fails to disclose or suggest the features of claim 34 which depends on claim 28.

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Gay fails to disclose or suggest "the output of the filter object is determined based on a present input of the filter object and a previous input of the filter object, and wherein the state of the filter object contains information about the previous input of the filter object," as recited in amended independent claim 37. As such, a combination of Denk and Gay fails to disclose or suggest the features of claims 42 and 43 which depend on claim 37.

For at least the reasons presented above, Denk and Gay, alone or in any reasonable combination, fail to disclose or suggest the features of dependent claims 4, 24, 25, 34, 42 and 43. Therefore, the combination of Denk and Gay does not support a valid 35 U.S.C. §103(a) rejection of claims 4, 24, 25, 34, 42 and 43.

B. Claims 8, 19 and 20

The Examiner rejected claims 8, 19 and 20 under 35 U.S.C. §103(a) as being unpatentable over Denk in view of AutoCode. Applicants respectfully traverse the 35 U.S.C. §103(a) rejections of claims 8, 19 and 20 for the reasons set forth below.

Denk has been summarized above.

AutoCode discusses the capability to generate C code for a digital filter in the same form and precision, up to 16 digits, that is specified in a Z transform (AutoCode, "General Information"). The code is compatible with any standard C or C++ compiler (AutoCode, "General Information"). The filter may be initialized at any point in time to any value, except that pass band filters only initialize to zero (AutoCode, "General Information"). The filter starts with an initial value of zero at the first call (AutoCode, "General Information").

A combination of Denk and AutoCode does not disclose or suggest the features of claims 8, 19 and 20. As discussed previously in connection with claim 1, Denk fails to disclose or suggest the features of claim 1 from which claims 8, 19 and 20 depend. The teachings of AutoCode do not supplement Denk in such a way as to cure the shortcomings of Denk with respect to the features of independent claim 1.

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For example, AutoCode fails to disclose or suggest "the output of the filter object is determined based on a present input of the filter object and a previous input of the filter object, and wherein the state of the filter object contains information about the previous input of the filter object," as recited in amended independent claim 1. The Examiner does not cite AutoCode as disclosing or suggesting this feature.

For at least the reasons presented above, Denk and AutoCode, alone or in any reasonable combination, fail to disclose or suggest the features of dependent claims 8, 19 and 20. Therefore, the combination of Denk and AutoCode does not support a valid 35 U.S.C. §103(a) rejection of claims 8, 19 and 20.

C.   Claims 9-18

The Examiner rejects claims 9-18 under 35 U.S.C. §103(a) as being unpatentable over Denk in view of AutoCode, and further in view of DFS. Applicants respectfully traverse the 35 U.S.C. §103(a) rejections of claims 9-18 for the reasons set forth below.

A combination of Denk, AutoCode and DFS does not disclose or suggest the features of claims 9-18. As discussed previously in connection with claim 1, the combination of Denk and AutoCode fails to disclose or suggest the features of claim 1 from which claims 9-18 depend. The teachings of DFS do not supplement Denk and AutoCode in such a way as to cure the shortcomings of Denk and AutoCode with respect to the features of independent claim 1.

For example, DFS fails to disclose or suggest "the output of the filter object is determined based on a present input of the filter object and a previous input of the filter object, and wherein the state of the filter object contains information about the previous input of the filter object," as recited in amended independent claim 1. The Examiner does not cite DFS as disclosing or suggesting this feature.

For at least the reasons presented above, Denk, AutoCode and DFS, alone or in any reasonable combination, fail to disclose or suggest the features of claims 9-18. Therefore, the combination of Denk, AutoCode and DFS does not support a valid 35 U.S.C. §103(a) rejection of claims 9-18.

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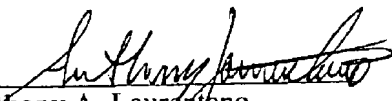
CONCLUSION

In view of the foregoing claim amendments and remarks, Applicants believe that all claims should be passed to issuance. Should the Examiner feel that a teleconference would expedite the prosecution of this application, the Examiner is urged to contact the Applicants' attorney at (617) 227-7400.

Please charge any shortage or credit any overpayment of fees to our Deposit Account No. 12-0080, under Order No. MWS-030. In the event that a petition for an extension of time is required to be submitted herewith, and the requisite petition does not accompany this response, the undersigned hereby petitions under 37 C.F.R. §1.136(a) for an extension of time for as many months as are required to render this submission timely. Any fee due is authorized to be charged to the aforementioned Deposit Account.

Dated: July 16, 2007   Respectfully submitted,

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